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The USENIX Association Newsletter

Volume 13, Number 2 **March/April 1988**

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The closing date for submissions for the next issue of *;login:* is April 29, 1988

THE PROFESSIONAL AND TECHNICAL
UNIX® ASSOCIATION

NOTICE

;login: is the official newsletter of the USENIX Association, and is sent free of charge to all members of the Association.

The USENIX Association is an organization of AT&T licensees, sub-licensees, and other persons formed for the purpose of exchanging information and ideas about UNIX[†] and similar operating systems and the C programming language. It is a non-profit corporation incorporated under the laws of the State of Delaware. The officers of the Association are:

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Contributions Solicited

Members of the UNIX community are encouraged to contribute articles to *;login:*. Contributions may be sent to the editors electronically at the addresses above or through the U.S. mail to the Association office. The USENIX Association reserves the right to edit submitted material.

;login: is produced on UNIX systems using `troff` and a variation of the –me macros. Contributions should be in `n/troff` input format, using any macro package.

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Candidate for President

Alan G. Nemeth

Biographical Information

Alan Gary Nemeth is a corporate consultant in the area of operating systems for Prime Computer, Inc., where he has broad responsibility for overall technical and strategic direction of many Prime products. He came to Prime from Bolt, Beranek and Newman, Inc., where he was responsible for developing BBN's UNIX activities, including the C machine. Previously he worked at the MIT Lincoln Laboratory on simulations of the air traffic system, graphics and networking. Dr. Nemeth holds an S.B. in Applied Mathematics from Columbia University, and an M.S. and Ph.D. in Applied Mathematics from Harvard University.

Dr. Nemeth has been president of the USENIX Association since June, 1984. Previously he was a director of the Association for two years and was the technical chair of the July 1982 USENIX conference. Dr. Nemeth was a member of the DARPA Steering Committee for the Computer Science Research Group at U.C. Berkeley, and is a member of ACM and the IEEE Computer group.

FaceSaver 2/88

Position Statement

Over the past two years, the USENIX Association has significantly improved the quality and quantity of technical information that we make available. Major new projects for us have been the series of workshops, *Computing Systems*, and UUNET, while the conferences, manuals, and distribution tapes have continued to prosper. UUNET and *Computing Systems* are the newest activities and still require major attention to move them from experimental status to full production.

Along with all these projects, we have also taken steps to implement more effective fiscal controls so we can project our cash flows adequately. We have moved the Association office to larger quarters and upgraded our internal computer system, as well as adding more staff.

Each of these activities has taken significant amounts of thoughtful planning which has been shared by committed board members, enthusiastic volunteers, and dedicated staff.

As an Association, however, we need to adapt to the changing role of the UNIX system in the marketplace. Many areas that were formerly active areas of development are stabilizing, while other areas are only just emerging. When I am asked about our role in UNIX standardization, my response is more likely to point at workshops and tutorials about C++ and MACH, than to emphasize our participation as one of the three institutional representatives on the IEEE P1003 committee. We need to be constantly alert to important new development areas and make it clear to all that the Association provides a focal point for discussion and community evaluation. It is only through constant attention to the content of our forums that we can assure you continued vitality.

It is sobering to realize that I first attended a USENIX meeting almost 12 years ago. There has been a dramatic change over those years, and we must ensure that we continue to change. I pledge to provide a home where innovative approaches to sharing technical results can develop. I ask the continued help of all of you in populating that home.

Candidate for Vice President

Deborah K. Scherrer

Biographical Information

Deborah K. Scherrer is currently a Computer Scientist for mt Xinu, Inc., where she works with their 4BSD-derived implementation of UNIX. After completing her undergraduate and graduate studies at UC Berkeley, she worked for 10 years as a Computer Scientist at Lawrence Berkeley Laboratory, where she was one of the primary researchers on the virtual operating system (software tools) project. At LBL she was also involved with other UNIX-related projects including the development of a computing environment for seismic research and nuclear test ban treaty verification. She serves as a member of the *UNIX Review* Editorial Board and the *Computing Systems* Editorial Panel, has been a Contributing Editor for *UNIX/World*, was founder of the Software Tools Users Group, and serves on the Board of Directors of the C Users Group. She is currently Vice President of the USENIX Association.

Position Statement

USENIX is well on its way to reaching its carefully considered goal – to become a professional, technical association focused on, as our new Journal so aptly states, "communication relevant to the theory, design, art, and engineering of advanced computing systems, especially those inspired or influenced by the UNIX tradition." We've come a long, long way from that reclusive group of early initiates. And somehow, magically, we've not lost our vitality in the process of growing. I feel we are still the focal point for the technical forces within the UNIX community, and we are still dynamic and resilient enough to provide new avenues for technical innovation and interchange. Our journal, long a gleam in the Board's eye, has finally materialized, thanks in large part to our cat-herding Executive Director Peter Salus and the marvelously energetic Mike O'Dell. Our conferences continue to improve and expand in technical excellence, and our tutorials tend to be the hit of the town. The new workshop program also seems destined for success. And, of course, we are tremendously proud of UUNET, the most recent in a series of experiments providing support for the over-loaded, but necessary Usenet.

FaceSaver 2/88

In spite of the USENIX successes there are new challenges to face. We need to further refine our understanding of our constituency, how best to serve and involve it. We have to further examine our goals and our members' interests to choose in which directions to channel our energy. There is also opportunity for enhancing our services and activities. The software distribution service, so dramatically necessary early on in the organization's history, needs to be re-evaluated. Our collection of publications, though significantly enhanced by the Journal, can still be expanded – perhaps by producing a series of single-topic volumes of papers. And, finally, we could certainly make improvements in our fiscal policies and the way we manage our affairs.

I have been involved, happily and luckily, with the Association since its incorporation, and have invested much of my time and energy in this organization because I believe it has much to offer its dynamic and free spirited group of people. I enthusiastically welcome the opportunity to continue serving as your Vice President.

Candidate for Secretary

Rob Kolstad

FaceSaver 2/88

Biographical Information

B.A.Sc. (Computer Science) Southern Methodist University, 1974; M.S.E.E. (Electrical Engineering) Notre Dame University, 1976; Ph.D. (Computer Science) University of Illinois at Urbana Champaign, 1982.

Computer Systems Manager, CONVEX Computer Corporation. Co-Program Chair 1985 Winter USENIX Conference. Chair 1988 Winter USENIX Conference. Co-Chair USENIX 1987 Systems Administrator Conference. Frequent speaker at USENIX conferences. Twelve years of UNIX experience.

Position Statement

The success of users' groups in general depends heavily on their correct discernment of their role in their particular community. USENIX's success and strength has been achieved in two ways. One way USENIX succeeds is by enabling and enhancing communication among all levels of UNIX users: through conferences, *;login:*, *Computing Systems*, Usenet mapping, UUNET, manual reproduction, tutorials, and workshops. USENIX must continue to engender projects like these and continue to monitor and improve their quality.

But potentially more important even than communication is innovation. The USENIX board continually strives to attain and experiment with new ideas and projects. Conference chairs constantly try new ideas: talks that really run on a schedule, uniformly typeset proceedings with work barely two months old, work-in-progress sessions, and for 1988: refereed papers. Few disagree that UUNET and the new workshop formats are innovative. This innovation continually revitalizes the organization and its membership.

I believe USENIX should continue to foster the positive communications and innovation that are so visible to the community. I have worked over the last two years to encourage the revival of small workshops as vehicles for focused technical gatherings, acquire the 75 megabyte distribution tape of public-domain sources, upgrade the presentation of conference proceedings, and encourage relevant projects. If re-elected, I will continue to work to support projects such as these and new innovative projects which contribute services or products to enhance not only communications but also technology within the UNIX community.

Candidate for Treasurer

Stephen C. Johnson

Biographical Information

A.B., Haverford College, M.S. and Ph.D. in mathematics from Columbia University. Worked at AT&T (Bell Labs and Information Services) 1967-1986. Research work included psychometrics, computer algebra, parsing, code generation, complexity theory, compiler construction, and VSLI design. UNIX experience includes the writing of `yacc`, `pcc`, `lint`, early versions of `spell`, etc.; with Dennis Ritchie, the port of UNIX to the Interdata 8/32. Was the former head of both the Computer Systems Research Department (Bell Labs) and the Language Development Department (Information Systems). Dr. Johnson is currently Vice President of Software for Ardent Computer, Inc., of Sunnyvale, California.

FaceSaver 2/88

Position Statement

In the "good old days" we gave conferences that were more popular than we anticipated, and we made gobs of money. We now give workshops that are more popular than we anticipated, but we also do UUNET, FaceSaver, *Computing Systems*, and other projects that eat money like it's going out of style. Managing the difference of two large numbers is tricky. We need to press ahead with managing "nuts and bolts" issues like cash flow to be able to do more and better things in the future.

Candidate for Member of the Board at Large

David A. Yost

Biographical Information

FaceSaver 2/88

I began working with computers in 1975, doing microprocessor hardware and software design. My initiation into the world of UNIX came in 1977 when, lacking access to a UNIX system, I read a set of Version 6 manuals cover-to-cover to see what UNIX was about. (How many new users start out that way nowadays?) I then worked on the Rand Editor and did other UNIX work for the Rand Corporation and did UNIX kernel and utilities work as a consultant and as a member of the Fortune Systems operating systems group. Currently, I have my own company, Grand Software, Inc., whose main product is the Grand Editor.

Position Statement

The USENIX board meets four times a year for two days at a time to oversee the ongoing business of the Association, which is carried out by our superb staff. We all contribute our own insights to solving problems, and consensus is usually reached pretty easily. I would find it easier to appeal for your vote if I felt there were any hotly contested issues on which to take a stand. Luckily for USENIX, there are not. USENIX has a pretty well-focused mission and style, and I think all of the people who have stepped forward to offer to serve on the board share similar goals and would contribute positively to board meetings.

Between meetings, each board member works toward furthering various projects. In my present term on the board, I started two new initiatives: the Face Saver project, which I hope we can expand into a membership list with photographs, and the C++ Workshop, which will expand this year to a combined conference and workshop in October. I believe these initiatives fulfill my campaign promises, which I will repeat this time with only slight modification.

I would like to see USENIX continue to be a place where programmers and hardware designers share technical information about interesting things they do on UNIX as well as to UNIX. Inevitably, some interesting work done to the UNIX system and its tools diverges from the combined blessing and curse of standardization. I hope USENIX can continue to accommodate new trends and be a home for those who want to share new work.

The present board is very motivated toward searching for new ways to serve USENIX members, and I look forward to continuing to participate in this thrust. The last thing I want to see is for USENIX to go stale.

If I am reelected to the Board of Directors, I will continue to work toward keeping USENIX alive and well — and fun.

Candidate for Member of the Board at Large

Waldo M. Wedel

Biographical Information

I work for NBI, Inc. of Boulder, Colorado as a Staff Specialist in Engineering doing Product Line Planning and Staff Consulting. I've held a variety of positions at NBI including responsibility for UNIX Operating System implementation and support in NBI's product line. Most recently, I have worked extensively with both the DOS and the Macintosh environments to explore ways to enhance them using UNIX Operating System based server systems.

During my term as Secretary of USENIX, I have advocated operating the activities of the USENIX Association on a more business-like basis so that we can evaluate the benefits and liabilities of our programs more accurately. With the Treasurer's help we have moved the office financial activities onto a computer based spreadsheet system so that the financial position of the Association can be evaluated quickly and accurately. I have also continued to provide a Board liaison to the USENIX meeting planning activities making a number of trips to proposed meeting sites to evaluate their potential for our use.

Position Statement

Our major semi-annual meetings continue to be quite successful by almost any standard we care to use. Attendance remains about 1500 people at these meetings, tutorials continue to be popular with good registration and generally good feedback from attendees. The quality of the technical programs continues to improve. Our workshop program is proving to be quite successful. Some of the workshops may in fact develop into regular technical conferences themselves, serving a portion of the membership not presently served by our present meeting schedule.

FaceSaver 2/88

The UUNET service experiment is providing much needed improved access to news and mail services for many people. It now appears that this experiment can be converted into a real service. While a number of questions about the experiment have been settled satisfactorily, some risks remain. At present it appears that operation as an additional USENIX service may be the most effective way to provide benefits to USENIX members.

The USENIX Association needs to improve its operating procedures so that new and diverse services can be implemented without negatively impacting older services which are still valuable and necessary. New activites and services need to be evaluated carefully to make certain that benefits to members can continue to be provided within the current financial structure. We need to have a high degree of confidence that new services which may not generate a revenue surplus can be financed by current revenue generating services.

Candidate for Member of the Board at Large

Eugene H. Spafford

Biographical Information

B.A., 1979, Mathematics and Computer Science (double major), SUNY at Brockport, NY; M.S., 1981, Information and Computer Science, Georgia Institute of Technology; Ph.D., 1986, Information and Computer Science, The Clouds Project, Georgia Institute of Technology; 1986-1987: Post-doctoral research in software testing as a Research Scientist II, Georgia Institute of Technology; 1987-present: Assistant Professor, Department of Computer Sciences, Purdue University. Also affiliated with the NSF-sponsored Software Engineering Research Center.

Member: ACM (and many ACM SIGs), IEEE, IEEE Computer Society, MAA, and (of course) USENIX. Among other professional activities, Gene was recently named to the ACM Curriculum 88 Taskforce and is a charter member of the Editorial Advisory Board for the USENIX journal *Computing Systems*.

Spaf has been using UNIX and UNIX-like systems for the last decade, and has been heavily involved in the Usenet and UNIX user community for the last 5 years.

Position Statement

USENIX is an organization chartered to help enhance communication and technical information flow among its members. The Association has many mechanisms to accomplish this: the semiannual conferences, the special-interest workshops, the newsletter, and the new journal are all examples. The Association can also provide services and advocacy for its members: the software distributions, the BSD manuals, pilot funding for UUNET and Stargate, student scholarships, and interactions with commercial groups and standards organizations have been conducted by USENIX in the past.

The challenge for USENIX in the coming years is to continue to innovate and serve its members while preserving its identity and maintaining (or increasing) the quality of its efforts. A strong component of these efforts must be better communication between the USENIX administration and its members. USENIX officers and business meetings need to be more accessible to members, and members need encouragement to voice their opinions and ideas about the directions of the Association.

I believe my roles as a researcher and as an educator provide me with valuable insights into some of the needs and interests of the USENIX community, as does my long-standing participation in the Usenet. If elected to the USENIX Board, I intend to help define new activities of value to the membership, to raise the awareness of USENIX activities and internal structure among the members, and be very accessible and responsive to comments and suggestions. The role of a Director is to involve members, not merely to represent them.

Candidate for Member of the Board at Large

Charles H. Sauer

Biographical Information

Charlie Sauer received his B.A. in mathematics and Ph.D. in computer sciences from the University of Texas at Austin. He joined IBM at the Thomas J. Watson Research Center in 1975. From 1977 to 1979 he was an Assistant Professor of Computer Sciences at the University of Texas at Austin. In 1979 he returned to the Watson Research Center and in 1982 transferred to the IBM development laboratory in Austin. He currently is a Senior Technical Staff Member and lead architect for AIX. His publications include three textbooks on performance modeling. He has received IBM Outstanding Innovation Awards for the Research Queueing Package (RESQ) and for the RT PC Virtual Resource Manager. He is a member of ACM and the IEEE Computer Society, and served on the ACM SIGMETRICS board of directors from 1981-1985.

FaceSaver 2/88

Position Statement

As UNIX and USENIX grow in importance, it is critical that a broad range of interest areas from the technical community be represented. With my varied background, in research, academic and product development environments, I believe I can respond to and represent a broad range of interest areas. Given the strong trend toward commercialization of UNIX, it is important that USENIX continue to be technically oriented and to foster technical communication. It is key that innovation not be stifled either by formality or commercial influences, yet is necessary that the Association pay attention to technical formalities, e.g., refereeing of papers for conferences and *Computing Systems* so that they have credibility and influence. Similarly, we must pay attention to commercial factors if technology is to have commercial influence.

Candidate for Member of the Board at Large

John S. Quarterman

Biographical Information

John Quarterman is a partner in Texas Internet Consulting (TIC) of Austin, who do UNIX programming, local area network design and implementation, and investigation of conformance to UNIX-related standards. He has previously worked at the University of Texas at Austin and at Bolt, Beranek and Newman, and has an A.B. in computer science from Harvard. He is a member of ACM, IEEE, AAAS, /usr/group and USENIX. He co-authored papers for the San Diego and Toronto ("UNIX System V and 4.1C BSD") USENIX conferences and served on the program committees for Washington and Phoenix. He has written articles such as "4.2BSD and 4.3BSD as Examples of the UNIX System," ACM Computing Surveys, December 1985, and "Notable Computer Networks," CACM, October 1986, and currently has two books in progress.

As the Institutional Representative from USENIX to the IEEE P1003 (POSIX) standards committee, jsq tries to improve the technical accuracy of the standards, to keep them from preventing innovation, and to encourage participation by relevant parties and coordination with organizations such as X/OPEN and /usr/group. He distributes information on UNIX-related standards to the membership and the public by moderating the Usenet newsgroup *comp.std.unix*, by commissioning a series of written reports for *comp.std.unix* and *;login:*, and by running standards BOFs at conferences. He instigated and helped run a USENIX workshop on POSIX implementation.

FaceSaver 2/88

Position Statement

As a board member, Quarterman encourages international coordination between USENIX and similar organizations, such as EUUG, and international representation on USENIX projects such as the journal review board.

He has helped organize improvements to the conferences (such as the "Work in Progress" sessions) and experiments for the benefit of the membership (such as UUNET). There should be other things that can be done to improve current USENIX activities, and new areas for the Association to be involved in: John serves as one point of contact for new ideas.

Candidate for Member of the Board at Large

Michael D. O'Dell

Biographical Information

Michael O'Dell received both his B.S. (1976) and M.S. (1980) degrees in Computer Science from the University of Oklahoma. He has been an avid UNIX devotee since first reading a borrowed Fifth Edition manual and then later (1977) commandeering his first PDP-11 to run Version 6. He went on to do computer network research at the Lawrence Berkeley Laboratory. Currently, Michael is Principal Systems Engineer at Maxim Technologies, Inc., a systems engineering house specializing in software for storing and analysing large data collections. He remains active in the areas of networks, operating systems, and electronic music.

FaceSaver 2/88

His recent USENIX activities include:

- Program Chair for the Atlanta 1986 Meeting
- Invited speaker to the Washington 1987 Meeting
- Invited speaker to the Fall 1987 EUUG meeting in Dublin
- Assisted Rick Adams with creating UUNET
- Editor-in-Chief of *Computing Systems*, the new USENIX quarterly journal.

Position Statement

I am standing for election to the Board because it is a great opportunity to contribute to the community. The USENIX Association was founded to provide services to the technical and professional UNIX community. I am deeply committed to this mission as indicated by my participation in two of the Association's latest new services to the community: I materially assisted with formulating and launching the UUNET communications service, and I serve as Editor-in-chief of *Computing Systems*, our new refereed quarterly journal.

As USENIX moves forward with new services and activities, it must keep a keen eye on what makes us different from other groups. For example, when people participate in a USENIX meeting for the first time, they are often astounded by what goes on. A software development manager who was a first-timer at the Atlanta meeting told me that he had never heard of a professional meeting where people can learn so much and have such a good time doing it. He was amazed at the general level of sophistication of the attendees, and at how willing they were to help a newcomer just learning the ropes. That is a tremendous compliment to the Association and its wonderfully eclectic membership, but should also serve to focus our attention.

As UNIX careens into the future as one of the ubiquitous operating systems, I feel it is vitally important for the USENIX Association to nurture our reputation as being the group focusing on the hard technical issues of UNIX and beyond while doing it in an atmosphere of congeniality and conviviality.

Just Remember: Thinking hard and having a good time doing it is a great job, and somebody's gotta do it.

Candidate for Member of the Board at Large

Sharon Murrel

Biographical Information

Sharon Murrel has been a member of technical staff at AT&T Bell Laboratories for 10 years. After completing her undergraduate degree at New York University and all but her doctoral thesis at the State University of New York at Stony Brook, she joined the Labs. There she developed a real-time satellite system named Parasite with Ted Kowalski and wrote a series of experiments and processes using that system, after which she did a thesis on computer conferencing and received her Ph.D. from Stony Brook. She then wrote monk, a database-driven formatting interface to `troff`. It is designed to simplify the end-user task, however, its main focus has been the development of typographical databases and the high-level language in which they are written. She is now experimenting with the interactive visual table editor recently presented at USENIX and new galleying and page layout primitives for `troff`.

FaceSaver 2/88

Position Statement

I have never been a member of the USENIX board, and have been only loosely involved with the Association for ten years. I admire the successful development of the association from a small, casual group of techies to a large, structured and yet still technical organization. The organization remains as strong as the technical content of its meetings, tutorials and publications. With the introduction of more technical workshops and the recent advent of the journal, these are constantly improving.

UNIX must also be innovative. USENIX must maintain its position as the forum for the technical innovations proposed and implemented by its increasingly diverse membership. I advocate more technical workshops, more effort to foster communication among the diverse interest groups and more funding for novel member projects.

Educational, research and advanced commercial development communities play a major role in the development and acceptance of UNIX. It is important that all of these communities be represented on the board. As a member of the research community at a small and backward, but long-lived UNIX facility, my viewpoint will bring a breath of fresh air in representing alternate interests. Moreover, the board needs an AT&T representative to heckle during discussions of the UNIX Operating System's future.

Candidate for Member of the Board at Large

Robert A. Morris

Biographical Information

Professor of Mathematics and Computer Science, University of Massachusetts at Boston with research interests in Digital Typography, especially image processing aspects of type, human vision, gray-scale characters, and automatic rasterization of type. Member of Technical Staff, Interleaf, Inc. since 1982. B.A., Mathematics, (Reed College, 1965), M.A., Ph.D. in Mathematics, (Cornell, 1967, 1970). Worked in, on, for, with, and despite UNIX since 1979, when I excised bytes out of much hacked V6 kernels to squeeze ever more drivers onto a PDP 11-34.

Position Statement

My main interest in USENIX comes from the changing relationship of users to UNIX, especially in an academic environment. Not long ago, universities were the only users outside of AT&T, and they all had UNIX in source form. With the advent of inexpensive UNIX boxes and workstations, more and more users see bundled UNIX, and many neither want nor can acquire sources for these systems. In academic environments this has forced the use of UNIX away from purely an object of study and closer to its original conception as a productive toolkit for a wide range of research and instructional uses. In other words, there is more UNIX use and less UNIX hacking today than ever before in universities. Therefore, I would devote my attention especially to the role of USENIX in encouraging and circulating the productivity tools which enhance UNIX. This would encompass the standardization efforts such as POSIX and window system efforts; but it should also include support of and dissemination of information about the efforts of the Free Software Foundation's public GNU project and similar tool collections.

FaceSaver 2/88

Efforts which promote the exchange of tools and information between universities and industry are important to USENIX users more than ever before. In the early days of the Association the flow of information was within the university community and between it and Bell Labs. Now, substantial real world applications are being developed under UNIX, and, in pursuit of this, non-proprietary tools are emerging from industry as well as from academia. This makes the UUNET project of particular importance to the Association, since it represents a way for smaller organizations to join the international community represented by the Internet and thereby to reach beyond the UNIX world itself. I would continue efforts to find a stable way to provide this connection, and to coordinate with similar efforts aimed at providing international connectivity to small organizations.

Candidate for Member of the Board at Large

M. Kirk McKusick

Biographical Information

Kirk McKusick got his undergraduate degree in Electrical Engineering from Cornell University. His graduate work was done at the University of California, where he received Masters degrees in Computer Science and Business Administration, and a Ph.D. in the area of programming languages. While at Berkeley he implemented the 4.2BSD fast file system and was involved in implementing the Berkeley Pascal system. He currently is the Research Computer Scientist at the Berkeley Computer Systems Research Group, continuing the development of future versions of Berkeley UNIX. He has been a member of the USENIX board since 1986. He is a member of the editorial board of *UNIX Review Magazine* and a member of ACM, IEEE, and USENIX.

Position Statement

The goal of the USENIX Association as stated in its charter is the "exchange and communication of research and technological information and ideas pertaining to UNIX and UNIX-related computer systems." The strength of the organization has been its emphasis on presenting the leading edge of UNIX research and technology. USENIX should continue to have conferences with refereed papers and proceedings available at or before the conference. I am committed to the new projects that we have started in the past two years. These include the new journal, *Computing Systems*, sponsorship of the mail and news hub, UUNET, and an expanded number of workshops, most of which have proceedings. I am pleased that we can now allow individual members to purchase the 4.3BSD manuals. I favor eliminating the licensing restrictions on the tutorials that we offer at our conferences (including my own).

FaceSaver 2/88

The emergence of the commercial UNIX marketplace has necessitated large marketing-oriented conferences such as those run by /usr/group. Although many members of USENIX need or want to attend these conferences, USENIX should not try to host marketing-oriented conferences. An appropriate compromise is to work with /usr/group to schedule separate conferences that are held at the same time and in the same city so that members can attend both conferences in a single trip.

Educational, research, and advanced commercial development communities have a major role in the development and promulgation of UNIX. As a researcher at an academic institution, my viewpoint will perform a key role in representing these interests.

Fifth Workshop on Real-Time Software and Operating Systems

Omni-Shoreham Hotel
Washington, DC

May 12-13, 1988

Sponsored by
The IEEE Computer Society
The USENIX Association

This year's workshop broadens the scope to include general real-time systems. This workshop will bring together researchers, designers, and implementers of real-time operating systems and software. There will be a substantial emphasis on practical experience, so workers from industrial organizations are encouraged to attend. Topics of specific interest include:

- Primary requirements of real-time systems
- Distributed real-time operating systems
- Application-specific operating systems
- Practical experiences and implications
- Exotic applications: medicine, music, etc.
- Architectural support for real-time
- Language, programming support, and reusability
- Types of real-time constraints
- Scheduling and resource management
- Predictability, adaptability, and maintainability
- Reliability and fault tolerance
- Instrumentation and performance measurement
- Case studies

The format of the workshop will be geared to encourage intense technical interactions and focussed discussions.

Those wishing to attend this workshop should contact Lui Sha at the address below immediately. Attendance will be limited and there are few spaces available.

Program Co-chairs:

Dr. Marc Donner
IBM Research
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Call for Papers
UNIX Security Workshop

Portland, Oregon

August 29-30, 1988

Matt Bishop is the chair for the UNIX Security Workshop to be held in Portland, Oregon, on Monday and Tuesday, August 29th and 30th, 1988. This workshop will bring together researchers in computer security dealing with UNIX and system administrators trying to use UNIX in environments where protection and security are of vital importance. It is believed these people battle many of the same problems repeatedly and can share their unique solutions to some problems in order to avoid duplication of effort in making UNIX secure enough for their needs. It is intended that each participant will present briefly unique attributes of his/her environment and/or research and contribute a short (five minute) discussion (and paper) detailing some solution from their environment or work.

Some topics to be considered include: password security (password file integrity, enforcing choice of a safe password, spotting and handling crackers), network security (problems arising from logins over an unprotected Ethernet, containing a break-in to one machine in a networked environment), file system security (auditing packages, security in an NFS environment), new designs to obtain C-level (or better) certification, making existing UNIX systems more secure, and locating and fixing UNIX security problems.

This gathering will follow a "workshop" format rather than a "paper presentation" format. Each participant will submit electronically to the chair a one or two page summary describing a solution to some problem. The summary should contain a description of the problem and a description of the solution detailed enough that fellow researchers and administrators can implement or use it. Also, include with your submission five (or so) topics that you'd like to hear about.

The workshop chair will collate the papers to schedule sessions for appropriate audiences. It is anticipated that some sessions will include all participants; some will be for smaller groups. Send your submissions to the chair by noon, EST **July 1, 1988**.

For further details on the workshop:

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For details about registration, contact:

USENIX Conference Office
P.O. Box 385
Sunset Beach, CA 90742

(213) 592-1381 or 592-3243
{uunet,ucbvax}!usenix!judy

Call for Papers
Workshop on UNIX and Supercomputers

Westin William Penn Hotel
Pittsburgh, Pennsylvania

September 26-27, 1988

Sponsored by the USENIX Association

A large number of supercomputers are now or will in the future be running UNIX as their primary operating system. This is the first workshop to consider the general problems of running UNIX on supercomputers, and will cover topics both practical and abstract. Areas of specific interest include but are not limited to:

Systems administration
Archiving
Scheduling
File systems
Networking and network protocols
Job batching systems
Monitoring performance/parallelism
Programming languages and environments
Fast file I/O
Shared memory management
IPC
Very large files
Checkpoint-restart

The workshop will include both shorter presentations and full-length papers, and there will also be tours of Pittsburgh Supercomputing Center and Westinghouse Energy Center facilities and a reception at the Pittsburgh Supercomputing Center. Workshop proceedings will be available at the Workshop.

If you are interested in presenting either a full paper or a brief discussion of your current work, please send an abstract of your paper or presentation to Melinda Shore by **July 15, 1988**. If you are sending your submission by US Mail, please send three copies. All submissions will be acknowledged.

Program Co-chairs:

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EUUG Spring 1988 Conference

London

April 11-15, 1988

The UKUUG will host the Spring '88 European UNIX systems User Group Technical Conference at the Queen Elizabeth II Conference Center in London. Technical tutorials will be held on April 11 & 12, followed by the three day conference.

For further information, contact the EUUG Secretariat at the address below.

Call for Papers: EUUG Autumn Conference

Portugal

October 3-7, 1988

The Autumn '88 European UNIX systems User Group Technical Conference will be held in southern Portugal. Technical tutorials will be held on October 3 & 4, followed by the three day conference.

The theme of the conference is "New Directions for UNIX." The EUUG invites abstracts from those wishing to present their work. Submissions from students are particularly encouraged under the EUUG Student Encouragement Scheme, details of which are available from the EUUG Secretariat. All submitted papers will be refereed. Abstracts must be submitted by **post** to the EUUG Secretariat.

The Programme Chair will be pleased to provide advice to potential speakers.

Deadlines are:

Receipt of abstract	30 April
Acceptance notification	15 May
Final paper received	1 August

Those interested in offering a tutorial should contact the EUUG Tutorial Officer as soon as possible.

For further information about this and future EUUG events, contact the Secretariat.

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Future Events

EUUG Spring Conference London, April 11-15, 1988

See page 19.

Real-Time Operating Systems Workshop Washington, DC, May 12-13, 1988

Sponsored by USENIX and the IEEE. The Program Chairs are Marc Donner and Lui Sha. See page 16.

USENIX 1988 Summer Conference and Exhibition San Francisco, June 20-24, 1988

The 1988 Summer Conference will be held at the Hilton Hotel in San Francisco. There will be a conference, tutorials, and vendor exhibits. You will receive a registration packet in late April.

UNIX Security Workshop Portland, OR, Aug. 29-30, 1988

The Program Chair is Matt Bishop of Dartmouth College. See page 17.

UNIX and Supercomputers Workshop Pittsburgh, PA, Sept. 26-27, 1988

The Program Chairs are Melinda Shore of the Pittsburgh Supercomputer Center and Lori Grob of New York University. See page 18.

EUUG Autumn Conference Portugal, Oct. 3-7, 1988

See page 19.

C++ Miniconference Denver, CO, Oct. 17-20, 1988

The Program Chair is Andy Koenig of AT&T. Information will be available in the next issue of *;login:*.

Large Installation System Administration II Monterey, CA, Nov. 17-18, 1988

The Program Chair is Alix Vasilatos of MIT's Project Athena. Information will be available in the next issue of *;login:*.

Fifth Annual Computer GO Tournament

The fifth annual USENIX Computer Go Tournament and Championship will be held on Wednesday, June 22, during the USENIX conference in San Francisco. All interested parties are invited to submit programs. The tournament rules will be essentially those established for the first USENIX Computer Go Tournament.

Sequent Computer will provide a Symmetry S81, which results in two major changes in the rules for this year. First, program time will be measured by clock time, not CPU time. This allows entrants to take advantage of the Sequent's multiple processors. Second, contestants may provide their own hardware such as IBM PCs; such entries must communicate with the Sequent machine over a 9600 baud RS-232 link, using the usual ASCII protocol to talk to the referee.

Conference attendees may bring programs to submit with them as long as they get in touch with Rob Pike NO LATER THAN noon on June 21 (preferably earlier). He can be reached through the Conference Office. Those unable to attend the conference who would like to enter programs can do so by sending a compilable source to one of the addresses below.

Comments, programs, or requests for more information (including details of the Sequent computing environment) can be sent via electronic mail to UUCP!research!rob or ARPA!rob@att.com. U.S. Mail should be sent to:

Rob Pike
Bell Labs 2C524
Murray Hill, NJ 07974 USA

An Update on UNIX and C Standards Activities

Shane P. McCarron, NAPS Inc.

January 21, 1988

Overview

The Standards community isn't necessarily a closed entity, but it is one that is hard to look into. There are so many different activities going on all over the place that it is difficult for most people to get involved. I suppose this is as it should be, since if everyone were involved, nothing would ever get accomplished. However, it is always good to know what is going on at a macro level, even if the details pass you by.

That is where this report comes in – I am going to try to summarize what has transpired in the UNIX and C standards areas during the past three months. As anyone who has been involved in a standards committee can tell you, not a lot will happen in a quarter in any one committee, but over several committees the cumulative effect can be daunting.

Before I start summarizing what went on in the last quarter of 1987, I should define the scope of this report. I am not going to try to touch on all of the technical discussions that go on. These are often boring, and if you have that level of interest, you should really be on the mailing list for the group in question. Instead, I am going to give an overview of some of the key issues that were raised and the important milestones that were reached or passed.

In addition to the activity at the December meetings of P003, a few other things happened that are worth noting:

P1003.1 Final Ballot

On November 15th the P1003.1 document went out for its full use ballot. The balloting period was 30 days, and closed around December 15th. When ballot resolution is completed, the first full use standard from a 1003 group will have been ratified. This should be around March, 1988.

[Unfortunately, the first 1003.1 ballot resolution procedure failed due to logistical difficulties partly caused by a too-short time period. A new resolution period is currently planned for April, meaning the IEEE 1003.1 Full Use Standard will probably be ratified in June. –jsq, 4 March 1988]

New P1003 Working Groups

There are three new working groups under the P1003 committee (.0, .5, and .6). Since I haven't talked about all of these before, here is a list of all of the POSIX working groups:

1003.0 – POSIX Guide
1003.1 – Systems Interface
1003.2 – Shell and Tools Interface
1003.3 – Verification and Testing
1003.4 – Real Time
1003.5 – Ada Binding for POSIX
1003.6 – Security

IEEE Standards Board

At the December meeting of the IEEE Standards Board, the Board approved the IEEE Technical Advisory Group Procedures document. This was a major event in that it allowed the first meeting of the United States TAG on POSIX to take place "in wedlock."

US Technical Advisory Group on POSIX

The first meeting of the US TAG on POSIX was held in conjunction with the P1003 meetings in December. A TAG is a group that exists in each International Standards Organization (OSI) member country that is interested in a particular ISO working group (in this case, WG15 of Subcommittee 22). The TAG recommends to the ISO standards body for that topic in that country what the country's position should be on the issue. In this case the standards body is the IEEE, and the issue is POSIX. In a future report, I hope to spend more time talking about what it means to be in the International Standards Organization, and how it affects POSIX.

Since it was the first meeting, the members present elected a chair and secretary, and learned about what it means to be a TAG. In addition to this, the TAG established what the US position on POSIX should be. Basically this boils down to "The US recommends that POSIX be accepted as a Draft Proposed Standard, but any changes made to the standard by IEEE P1003.1 should be incorporated into the ISO document." It would be very bad form not to recommend our own standard.

C Language

C Language Standard

In addition to the P1003 standards activities, the work of the X3J11 standards committee holds particular interest for people in the UNIX community. This is the group that is defining the ANSI X3.159 C Language Standard. They have been working on this for quite a while now, and are very close to resolution. They went into their first public review period last spring, and have just recently finished responding to all of the comments that were submitted at that time.

Based on information I have about the December meeting of X3J11, here is what is happening in the future:

- Around January 8th, 1988 the second public review draft will be completed.
- Soon after that, the second (2 month) public review period will begin. As with last time, the standard will be available to the public through Global Press in Washington, DC.
- This public review will close in time for the comments to get out to the committee members before the April meeting.
- At that meeting, the committee will break down into subgroups and review the comments. There will be great resistance to making any substantive (non-editorial) changes to the standard. If there are any substantive changes made, it will result in another public review period, which will delay the standard for at least one calendar year.
- Assuming that there are no substantive changes to the standard after the next public review period, there should be a ratified standard before the end of 1988.

If the C Language Standard can be completed before the end of the year, it could mean a lot for POSIX system implementors. Since the .1 standard will not be really a standard until June, it is unlikely that vendors will be able to complete an implementation before the end of 1988 in any event. If they could release a system that supported both Standard C and POSIX, it would be a real shot in the arm for application developers. A delay of another year on Standard C would mean that application developers must write code under POSIX that could very well be broken under an ANSI C conforming compiler.

NBS FIPS

NBS POSIX FIPS

One other item that is of concern to system implementors and application developers alike is that the National Bureau of Standards (NBS) is going to announce a POSIX Federal Information Processing Standard (FIPS) this month. This FIPS will be used by most federal agencies when drafting Request for Proposals (RFPs) for many classes of applications.

Just what is NBS going to require? Well, the NBS POSIX FIPS is based on POSIX D12, the draft that went out to the balloting group. The final POSIX standard may be considerably different than this, but NBS has assured the .1 working group that they will incorporate the substantive changes in the standard into their FIPS when the standard is complete.

So, if NBS is going to specify POSIX as the FIPS, what are we worried about? Well, in order to increase consensus and support as many existing implementations as possible, POSIX has a lot of "options" in it. NBS felt that these "options" made it difficult for applications developers to write applications that used the nice facilities of POSIX (they are right), so they are requiring that many of these options be included in a FIPS conforming implementation. For systems implementors, this means that you had better include all of these options if you want to sell to the federal government. For applications developers, it means that if your customer base is the federal government, you can use these facilities without fear – they will be there.

What are these options? Well, the following is an excerpt from the NBS POSIX FIPS draft specification.

As an aside, it is important to note that many of these so-called "options" are not really options at all, but rather cases in which there was some ambiguity as to how the system would function. I will indicate in the following list some examples of real options and their opposites for clarity.

- The term "appropriate privileges" shall be synonymous with the term "super-user."

This is not really an option, but rather a clarification being introduced by the NBS people. The term "appropriate privileges" was introduced into the standard to provide for secure implementations of POSIX. By indicating that certain facilities of POSIX require "appropriate privileges," the door was left open for implementations where processes could have subsets of the power normally granted to a monolithic "super-user." In fact, the above requirement is incorrect. You could not simply replace the term "appropriate privileges" with the term "super-user" throughout the standard and have it make any sense. However, we get the idea.

- A null pathname shall be considered invalid and generate an error (2.10.3, lines 894-896).

- The use of the `chown()` function shall be restricted to a process with super-user privileges (2.10.4, lines 924-926).

This is an example of a real option in POSIX. If the macro _POSIX_CHOWN_RESTRICTED is defined, it means that only a process with "appropriate privileges" can change the owner of a file. This is in conflict with the current System V definition of how `chown` works, but is more in line with trusted implementations. Users should not be able to "give away" files.

- Only the super-user shall be allowed to link or unlink directories (2.10.4, lines 938-939).

Another useful option. A portable application may need to know whether it requires "appropriate privileges" to move directories around.

- The owner of a file may use the `utime()` function to set file timestamps to arbitrary values (2.10.4, lines 943-945).

- The implementation shall support a value of {NGROUPS_MAX} greater than or equal to eight (8) (2.9.2). An implementation may provide an option for setting {NGROUPS_MAX} to a value other than eight (8).

The POSIX standard is still in the ballot resolution process. When it went to ballot it defined the BSD-style supplementary groups feature. This says that there is a group-id associated with a process, but that there may be additional, supplementary groups also.

As of this writing, the definition has been changed to a more flexible definition. There will now be an array of group IDs associated with a process. Although this change has not been accepted by the full balloting group yet, I think that it will be.

- The implementation shall support the setting of the group-ID of a file (when it is created) to that of its parent directory (2.10.4, lines 934-937). An implementation may provide a programmable selectable means for setting the group-ID of a file (when it is created) to the effective group-ID of the creating process.

This is another example of a true option. Here the FIPS is specifying the BSD method of creating files. This method makes a lot of sense in a multiple group per process environment. However, they also allow the System V behavior.

- The use of `chown()` shall be restricted to changing the group-ID of a file to the effective group-ID of a process or when {NGROUPS_MAX} > 0, to one of its supplementary group-IDs (2.10.4, lines 927-930).

- The `exec()` type functions shall save the effective user-ID and group-ID (2.10.3, lines 902-903).

This mirrors the System V behavior.

- The `kill()` function shall use the saved set user-ID of the receiving process instead of the effective user-ID to determine eligibility to send the signal to a process (2.10.3, lines 891-893).

This is also similar to System V.

- When a session process group leader executes an `exit()` a SIGHUP signal shall be sent to each member of the session process group (2.10.3 lines 880-883).
- The terminal special characters defined in Sections 7.1.1.10 and 7.1.2.7 can be individually disabled by using the value specified by _POSIX_V_DISABLE (2.10.4, lines 946-949; 7.1.1.10; 7.1.2.7).
- The implementation shall support the _POSIX_JOB_CONTROL option 2.10.3, lines 884-886).

Although I have not described how job control works under POSIX, suffice it to say that it is confusing at best. The ballot resolution group is still trying to decide how to resolve the problems pointed out during balloting.

- The implementation shall provide a single utility for reading and writing POSIX data interchange format files (10.). This utility shall be capable of reading USTAR and CPIO data interchange formats without requiring the format to be specified. The implementation shall write CPIO data interchange format when no option on format type is specified.
- Pathnames longer than {NAME_MAX} shall be considered invalid and generate an error (2.10.4, lines 940-942).
- When the `rename()`, `unlink()` or `rmdir()` function is unsuccessful because the conditions for [EBUSY] occur, the implementation shall report the [EBUSY] errno (5.5.1.4, lines 481-482; 5.5.2.4, lines 523-524; 5.5.3.4, lines 593-594).
- When the `rename()` function is unsuccessful because the conditions for [EXDEV] occur, the implementation shall report the [EXDEV] errno (5.5.3.4, lines 593-594).
- When the `fork()` or `exec()` type function is unsuccessful because the conditions for [ENOMEM] occur, the implementation shall report the [ENOMEM] errno (3.1.1.4, line 54; 3.1.2.4, lines 175-176).
- When the `getcwd()` function is unsuccessful because the conditions for [EACCES] occur, the implementation shall report the [EACCES] errno (5.2.2.4, lines 148-149).
- When the `chown()` or `wait2()` function is unsuccessful because the conditions for [EINVAL] occur, the implementation shall report the [EINVAL] errno (3.2.1.4, line 272; 5.6.5.4, line 857).
- The implementation shall detect an [EFAULT] errno condition (2.5, lines 554-558). The implementation must state as part of the required documentation: (1) the conditions when an [EFAULT] is detected and an [EFAULT] errno is generated, and (2) those conditions, if any, when [EFAULT] may not be detectable.
- The `tcsetattr()` function shall only set the parameters supported by the underlying hardware associated with the terminal (7.2.1.2, line 502).
- An interrupted `write()` function shall return a count of the number of bytes successfully transferred from the application program to the system (6.4.2.2, lines 195-196; 6.4.2.4. lines 240-242).
- An implementation may provide errno [ENOEXIST] in place of errno [EACCES].
- A POSIX FIPS implementation shall successfully PASS the NBS-PCTS validation suite.

From all of these options, I am sure that it is obvious that there is room for considerable variation in the POSIX standard. The FIPS goes a long way towards firming up an otherwise wishy-washy document. Since many system implementors want to sell to the US Government, it is probable that all of the above requirements will be available on a majority of POSIX conforming systems. This is excellent news for application developers who want to take advantage of some of the additional facilities introduced in POSIX as optional.

Status of the IEEE P1003 Working Groups

1003.1 – System Services Interface

The .1 working group has reached an interesting point in its life. Since the standard they have produced is now in final ballot and ballot resolution, the working group in effect has nothing more to do. At the December meeting they tried to decide what, if anything, should be done by this body in the future. Although no decision on this was made, many good options were suggested.

Most promising among these is the design of a language independent description of POSIX. One of the requirements that ISO made of POSIX when it was adopted as a Draft Proposed Standard last fall was that at some point in the future it be described in such a way that the functionality could be understood without an understanding of the C language. ISO recognized that it was unrealistic to make this a requirement before adopting the standard, but felt that it was reasonably important. I feel that this is something the working group will be taking on soon after the Full Use Standard is approved by IEEE.

1003.2 – Shell and Tools Interface

The Shell and Tools group is operating under a very ambitious schedule. The National Bureau of Standards (NBS) has indicated that they are going to declare a Federal Information Processing Standard (FIPS) based on the command set in the .2 standard, and that they are going to do so in the summer of '88. This working group only started serious work one year ago, and has already produced a larger document than the .1 group did in four. The group is working hard to make sure that the command set is locked down before the deadline being imposed by NBS.

Unfortunately, this has the consequence that many decisions are being made as rapidly as possible. I am afraid that the resulting standard may be flawed, if only because the group is moving forward too fast. On the other hand, the .1 group was guilty of exactly the opposite, and NBS pressure has forced that group to really get its act together. It has proven to be a boon there, and it may do so here as well.

The Shell and Tools group has a milestone schedule something like:

Date	*Milestone*
Mar '88	Command Selection frozen; 75% described.
Jun '88	100% commands described; functional freeze.
Oct '88	Clean-up, slack; produce "mock ballot" for draft (#8); international signoff.
Jan '89	Resolve mock objections; produce balloting draft (#9).
Apr '89	Resolve ballot objections; produce final standard.
Jul '89	Final standard approved by IEEE.

This may not appear to be all that hectic a pace, but I can assure you that it is. When I say that the commands are 100% described, it means that the current functionality of each command that has been included in the standard (a substantial part of the current UNIX command set) is described in painful detail. The goal of the standard is to describe each command in such a way that a person who has never seen a UNIX machine can write the commands from scratch. It's a lot of text. With about 75% of the commands in, and those being about 75% described (albeit incorrectly in some cases) the document is now approaching 400 pages. In a future report I will tell you just what is involved in a command description. We don't have the space this time.

1003.3 – Testing and Verification

This is another group that has been very active in the last year or so. They have the dubious honor of figuring out how to test whether implementations of the .1 standard are actually conforming. Although the IEEE is not going to be providing any validation services or rating and systems, P1003 thought that it was important that they define what parts of the system should be tested in what ways.

The .3 group seems to be on track for balloting within the next 6 to 9 months. Their work is very far along, and a verification suite is already being worked on by the NBS based on the .3 assertion list about POSIX. Although the .3 document will not be as earth-shattering as POSIX, it is a still a very important step – actually showing how to test conformance to a standard at the same time you are defining one.

1003.4 – Real Time

Until recently, all the real time considerations in POSIX were being looked into by a /usr/group technical committee. Last fall that committee decided that their research was mature enough that they could actually start the work of producing a standard about it. The real time work promises to add much of the functionality that I and many others feel is absolutely necessary in POSIX; things like semaphores, shared memory, event processing, and other inter-process communication mechanisms that were left out of the .1 standard because they just did not have the time.

Unfortunately, there is quite a bit of dissension as to how all of these things should be implemented. Not just IPC, but also contiguous files, timers, and those things that a real time application would need to really be real time. After talking to some of the people who attended the December meeting, I would guess that this group has a long way to go.

However, what will happen when they get there? At this time I'm guessing that the .4 document will be positioned as a supplement to the .1 standard. It should require no changes to the .1 standard, and will probably be a set of optional facilities, as job control and some others are already. When this standard is finally produced, it will answer many of the objections we have heard to POSIX all along. I am sure that it will be well received. Let's hope that it can be timely enough to be useful.

Publications Available

The following publications are available from the Association Office. Prices and overseas postage charges are per copy. California residents please add applicable sales tax. Payments **must** be enclosed with the order and **must** be in US dollars payable on a US bank.

Conference and Workshop Proceedings

Meeting	Location	Date	Price	Overseas Mail Air	Surface
USENIX	Dallas	Winter '88	$20	$25	$5
C++ Workshop	Santa Fe	November '87	$15	$25	$5
Graphics Workshop IV	Cambridge	October '87	$10	$15	$5
USENIX	Phoenix	Summer '87	$20	$25	$5
USENIX	Wash. DC	Winter '87	$10	$25	$5
Graphics Workshop III	Monterey	December '86	$10	$15	$5
USENIX	Atlanta	Summer '86	$10	$25	$5
Graphics Workshop I	Monterey	December '84	$ 3	$ 7	$5

NOTICE: There was a paper inadvertently omitted from the Dallas Proceedings. It will appear in the May/June issue of *;login:*. –Ed.

The EUUG Newsletter, which is published four times a year, is available for $4 per copy or $16 for a full-year subscription.

The July 1983 edition of the EUUG Micros Catalog is available for $8 per copy.

Want to get Published?

O'Reilly & Associates is looking for knowledgeable authors to write new titles for its series of Nutshell Handbooks.

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–PHS

Interested in China?

Communication International is a venture involved in personnel exchanges between the Peoples Republic of China and the US. CI approached the USENIX Association for assistance.

The Chinese personnel exchange committee is interested in American firms and educational institutions that might be interested in promoting relationships by hosting an individual for varying periods of time. CI services and fees vary with length and type of arrangement.

Many of the Chinese have expertise in computer science and are interested in placements in both large and small companies or educational institutions. After a period of up to a year in an American setting, the Chinese visitors will return home and their US counterparts may accompany them for either short or long-term exchanges.

In addition to encouraging business contacts and relationships, these exchanges build trust for further development and business and academic relationships. The Chinese are often interested in long-term arrangements, e.g. for periods like 30 years.

For further information, contact:

Communication International
1545 Green Street
San Francisco, CA 94123
(415) 499-5772

4.3BSD Manuals

The USENIX Association now offers all members of the Association the opportunity to purchase 4.3BSD manuals.[†]

The 4.3BSD manual sets are significantly different from the 4.2BSD edition. Changes include many additional documents, better quality of reproductions, as well as a new and extensive index. All manuals are printed in a photo-reduced 6″×9″ format with individually colored and labeled plastic "GBC" bindings. All documents and manual pages have been freshly typeset and all manuals have "bleed tabs" and page headers and numbers to aid in the location of individual documents and manual sections.

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[†] Tom Ferrin of the University of California at San Francisco, a former member of the Board of Directors of the USENIX Association, has overseen the production of the 4.2 and 4.3BSD manuals.

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Local User Groups

The USENIX Association will support local user groups by doing an initial mailing to assist the formation of a new group and publishing information on local groups in *;login:*. At least one member of the group must be a current member of the Association.

In the **Atlanta** area there is a group for people with interest in UNIX or UNIX-like systems, which meets on the first Monday of each month in White Hall, Emory University.

Atlanta UNIX Users Group
P.O. Box 12241
Atlanta, GA 30355-2241

Marc Merlin (404) 442-4772
Mark Landry (404) 365-8108

In the **Boulder**, Colorado area a group meets monthly at different sites for informal discussions.

Front Range UNIX Users Group
USENIX Association Exhibit Office
5398 Manhattan Circle
Boulder, CO 80303

John L. Donnelly (303) 499-2600
{boulder,usenix}!johnd

A UNIX users group has formed in the **Coral Springs**, Florida, area.

S. Shaw McQuinn (305) 344-8686
8557 W. Sample Road
Coral Springs, FL 33065

Dallas / Fort Worth UNIX Users Group
Seny Systems, Inc.
5327 N. Central, #320
Dallas, TX 75205

Jim Hummel (214) 522-2324

Michigan!/usr/group in the **Detroit/Ann Arbor** area has dinner meetings with feature presentations and informal discussions the first Wednesday of each month.

Linda Mason (313) 855-4220
michigan!/usr/group
P.O. Box 189602
Farmington Hills, MI 48018-9602

In **Fresno,** California, the Central California UNIX Users Group consists of an electronic mailing list to which members may post questions or information. Communication is by `uucp`; for connection information:

Educational and governmental institutions:

Brent Auernheimer (209) 294-4373
Department of Computer Science
California State University
Fresno, CA 93740-0109

CSNET: brent@CSUFresno.edu
uucp: csufres!brent

Commercial institutions or individuals:

Gordon Crumal (209) 435-6062
Harry J. Wilson & Company
Insurance Correspondents, Inc.
2350 W. Shaw Ave, Suite 110
Fresno, CA 93711

uucp: csufres!tower!gordon

The **Los Angeles** UNIX Group meets on the third Thursday of each month in Redondo Beach.

Drew Bullard (213) 535-1980
{ucbvax,ihnp4}!trwrb!bullard

Marc Ries (213) 535-1980
{decvax,sdcrdcf}!trwrb!ries

In the **Melbourne,** Florida area the Space Coast UNIX Users Group meets at 8pm on the third Wednesday of each month at the Florida Institute of Technology.

Alex Stover (305) 724-3962
codas!lola!als

Bill Davis (305) 242-4449
bill@ccd.harris.com

In **Minnesota** a group meets on the first Wednesday of each month.

UNIX Users of Minnesota
Mark Colburn (612) 935-2688
4732 Spring Circle
Minnetonka, MN 55343

mark@ems.mn.org
ihnp4!meccts!ems!mark

In the northern **New England** area is a group that meets monthly at different sites.

Emily Bryant (603) 646-2999
Kiewit Computation Center
Dartmouth College
Hanover, NH 03755

David Marston (603) 883-3556
Daniel Webster College
University Drive
Nashua, NH 03063

decvax!dartvax!nneuug-contact

In the **New York City** area there is a non-profit organization for users and vendors of products and services for UNIX systems.

Unigroup of New York
G.P.O. Box 1931
New York, NY 10116

Ed Taylor (212) 513-7777
{attunix,philabs}!pencom!taylor

The **New Zealand** group provides an annual Workshop and Exhibition and a regular newsletter to its members.

New Zealand UNIX Systems User Group
P.O. Box 13056
University of Waikato
Hamilton, New Zealand

The UNIX SIG of the **Philadelphia** Area Computer Society (PACS) meets mornings on the 3rd Saturday of each month at the Holroyd Science building, LaSalle University, 20th and Olney Streets, North Philadelphia. One of the benefits of membership is access to the UNIX-based bulletin board system with a uucp connection.

G. Baun, UNIX SIG
c/o PACS
Box 312
La Salle University
Philadelphia, PA 19141

{inhp4,cbosgd,rutgers}!{bpa,cbmvax}!
temvax!pacsbb!{gbaun,whutchi}

In the **Orlando**, Florida area the Central Florida UNIX Users Group meets at 7pm on the third Thursday of each month. Programs include informal presentations, demonstrations and discussions.

Mike Geldner (305) 862-0949
codas!sunfla!mike

Ben Goldfarb (305) 275-2790
goldfarb@hcx9.ucf.edu

Mikel Manitius (305) 869-2462
{codas,attmail}!mikel

A group has started in the **St. Louis** area:

St. Louis UNIX Users Group
Plus Five Computer Services
765 Westwood, 10A
Clayton, MO 63105

Eric Kiebler (314) 725-9492
ihnp4!plus5!sluug

The **San Antonio** UNIX Users (SATUU) maintains communications largely by a local uucp network. They also meet the third Wednesday of each month at 7pm.

William T. Blessum, M.D. (512) 692-0977
7950 Floyd Curl Dr. #102
San Antonio, TX 78229-3955
{gatech,ihnp4}!petro!bles!wtb

The local uucp network "postmaster" is:
Bruce Andreen (512) 656-3053
{gatech,ihnp4}!petro!bruce

In the **Seattle** area there is a group with over 150 members, a monthly newsletter, a software exchange system, and monthly meetings.

Bill Campbell (206) 232-4164
Seattle UNIX Group Membership Information
6641 East Mercer Way
Mercer Island, WA 98040

uw-beaver!tikal!camco!bill

A UNIX/C language users group has been formed in **Tulsa**.

Pete Rourke
$USR
7340 East 25th Place
Tulsa, OK 74129

In the **Washington, D.C.**, area a group meets the first Tuesday of each month.

Washington Area UNIX Users Group
2070 Chain Bridge Road, Suite 333
Vienna, VA 22180

Samuel Samalin (703) 448-1908

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